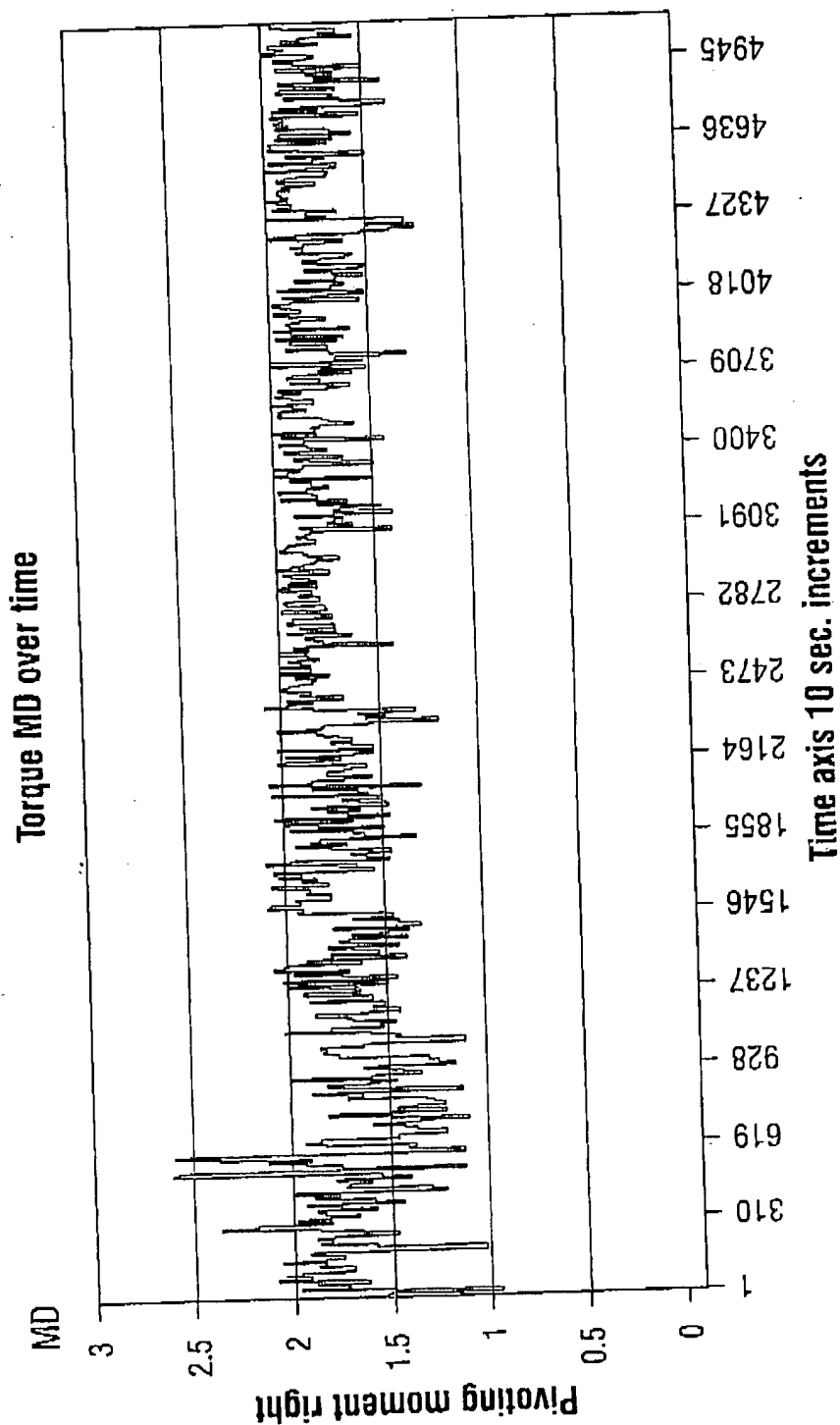


10/586559

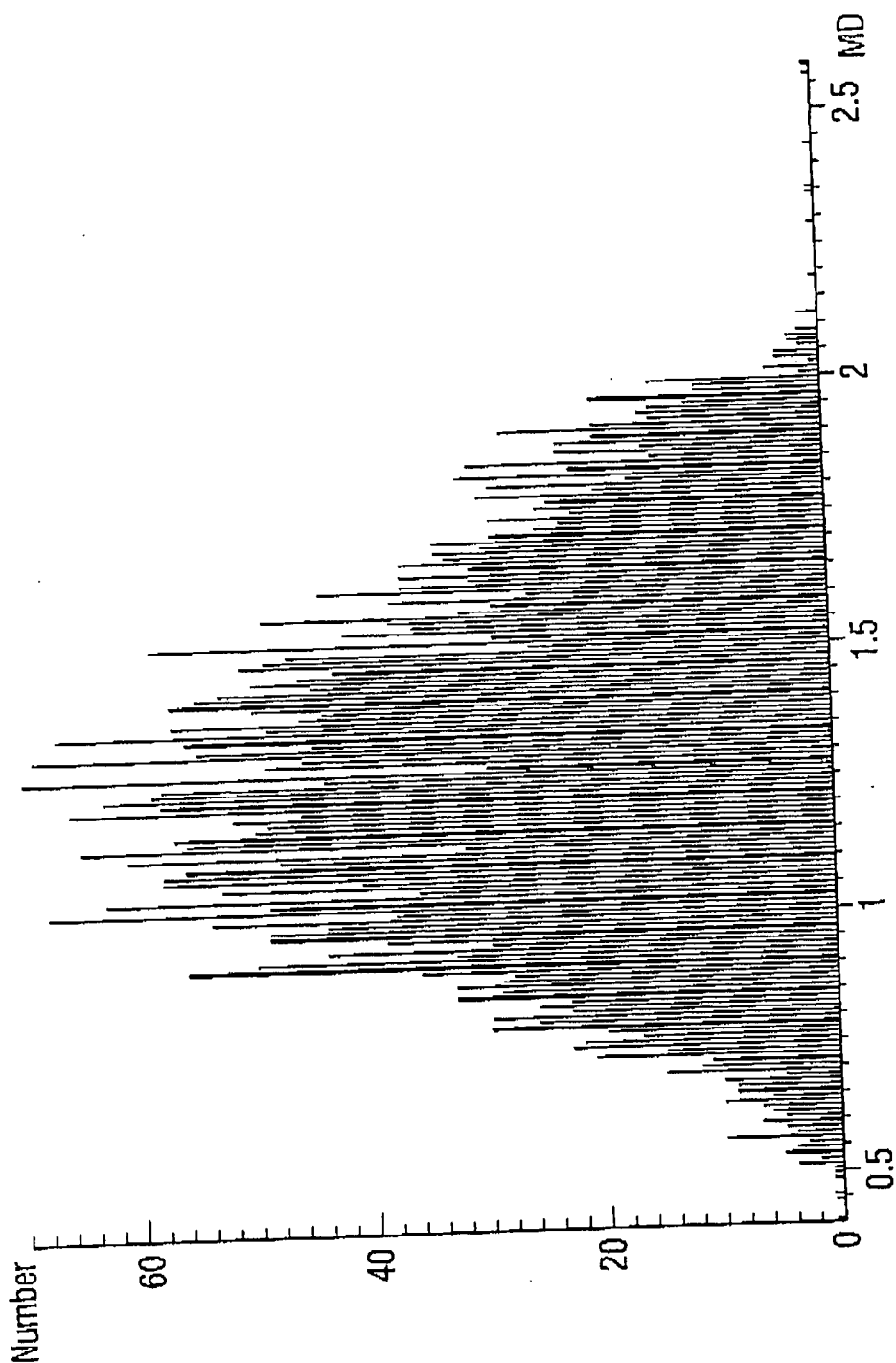
1/11



**Fig. 1** : Measured torque MD of a produced hinge over time (time axis in 10 second increments)

APPROXIMATE

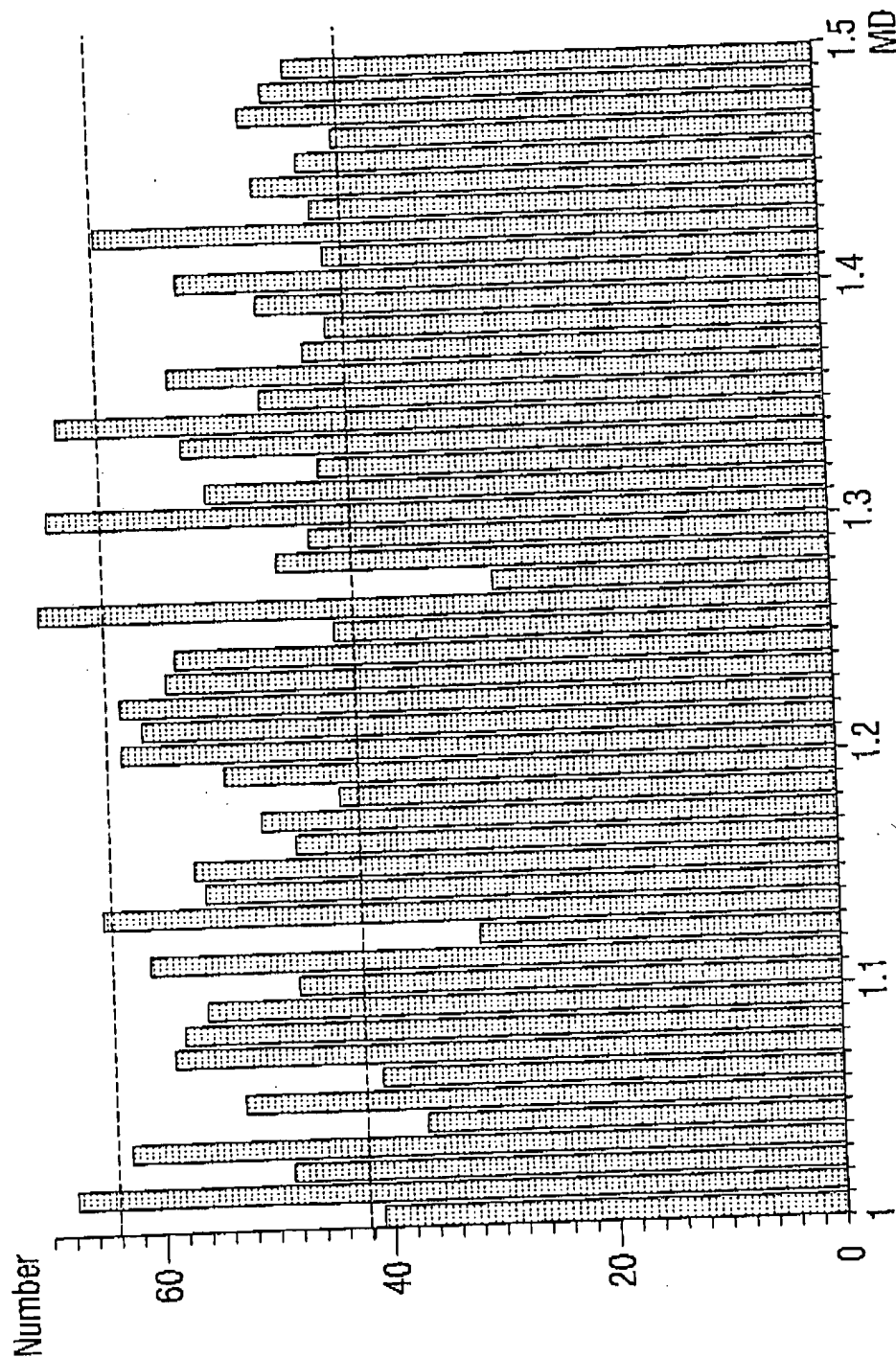
2/11



**Fig. 2** : Histogram of the torque MD with the measuring range 0 Nm to 2.5 Nm on the X-axis

REPLACEMENT

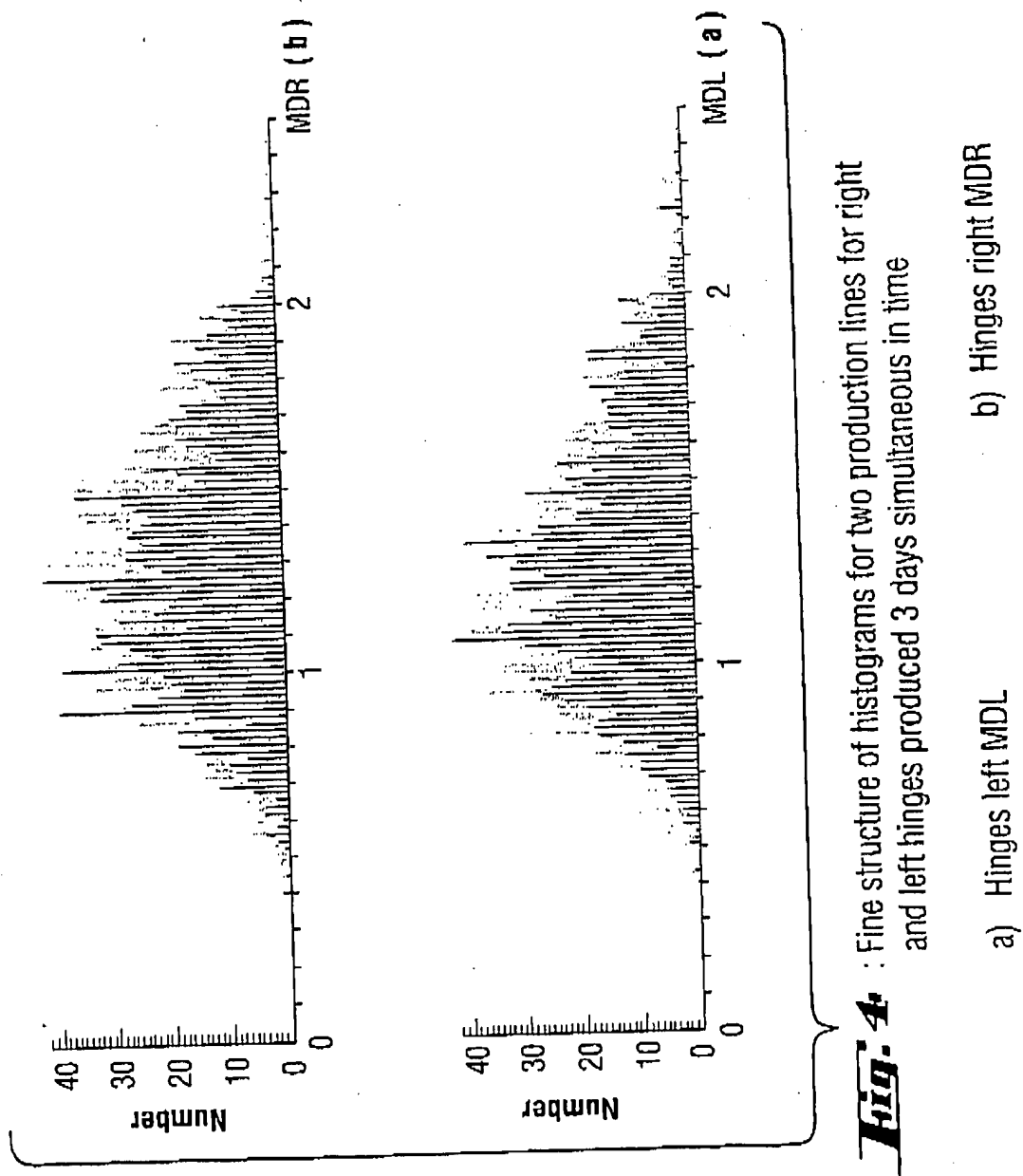
3/11



**Fig. 3** : Histogram of the torque MD with the measuring range 1.0 Nm to 1.5 Nm on the X-axis

REPLACEMENT SHEET

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REPLACEMENT

5/11

Global-Scaling-Calculation (GSC) 3000 professional  
File Analysis F2 Synthesis F3 Optimization Reset F5 Help

Current DS  Analysis  Synthesis  Pre-History  Post-History  Reset

No.  Designation:  Category:

1/1

SubY:  SubZ:  SubX:   
InY:  InZ:  InX:

Measure:

X:

+dX:

-dX:

X take over

PartZ:

GlobH:

GlobC:

SubV:

InV:

SubN0:   InN0:

SubN1:   InN1:

SubN2:   InN2:

Optimize  Super-flexib.

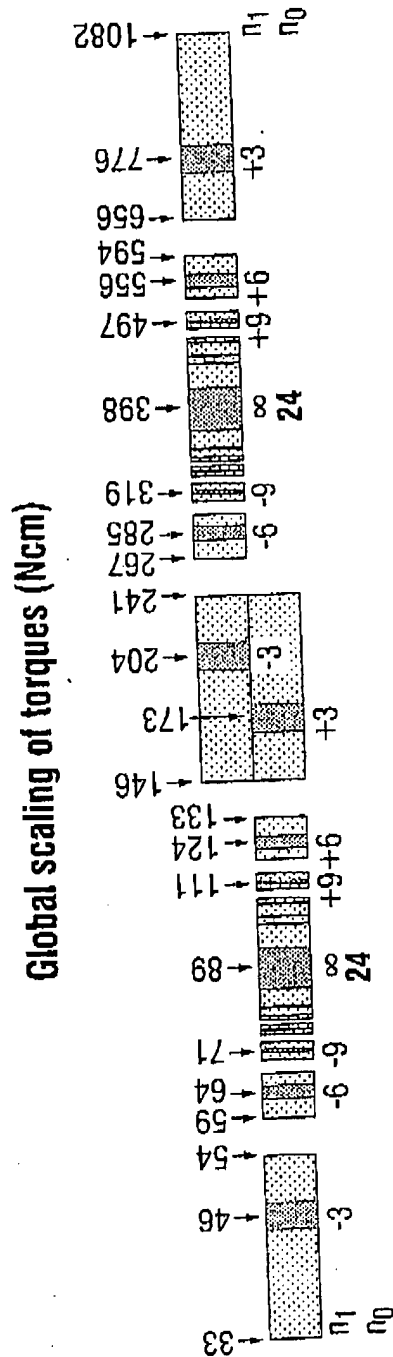
Overview data records

Overview standard measures

**Fig. 5** : GSC3000 tool for GS analysis of physical and technical variables

REPLACEMENT

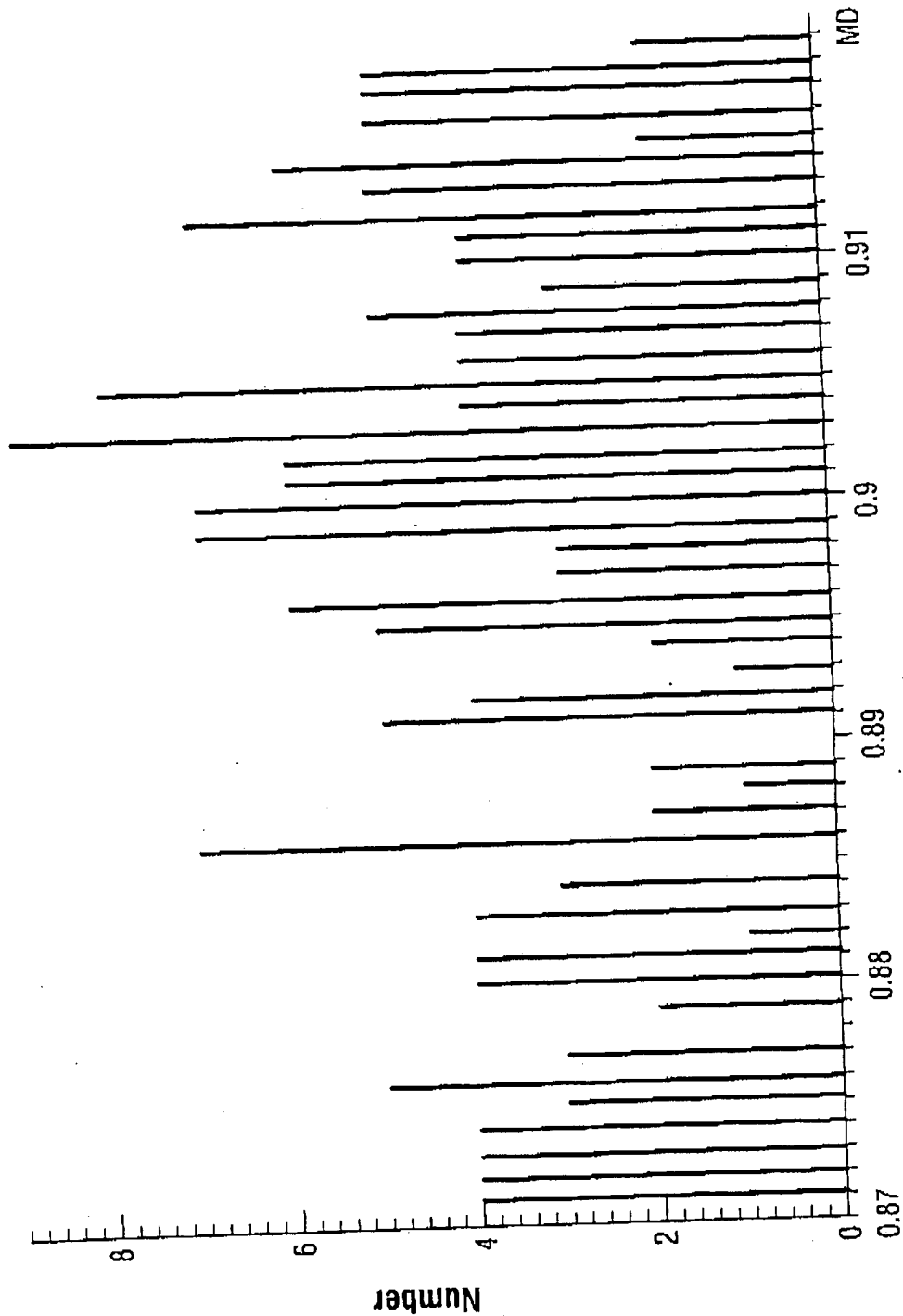
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**Fig. 6** : GS analysis of torque (in Ncm) of automotive hinges

REPLACEMENT

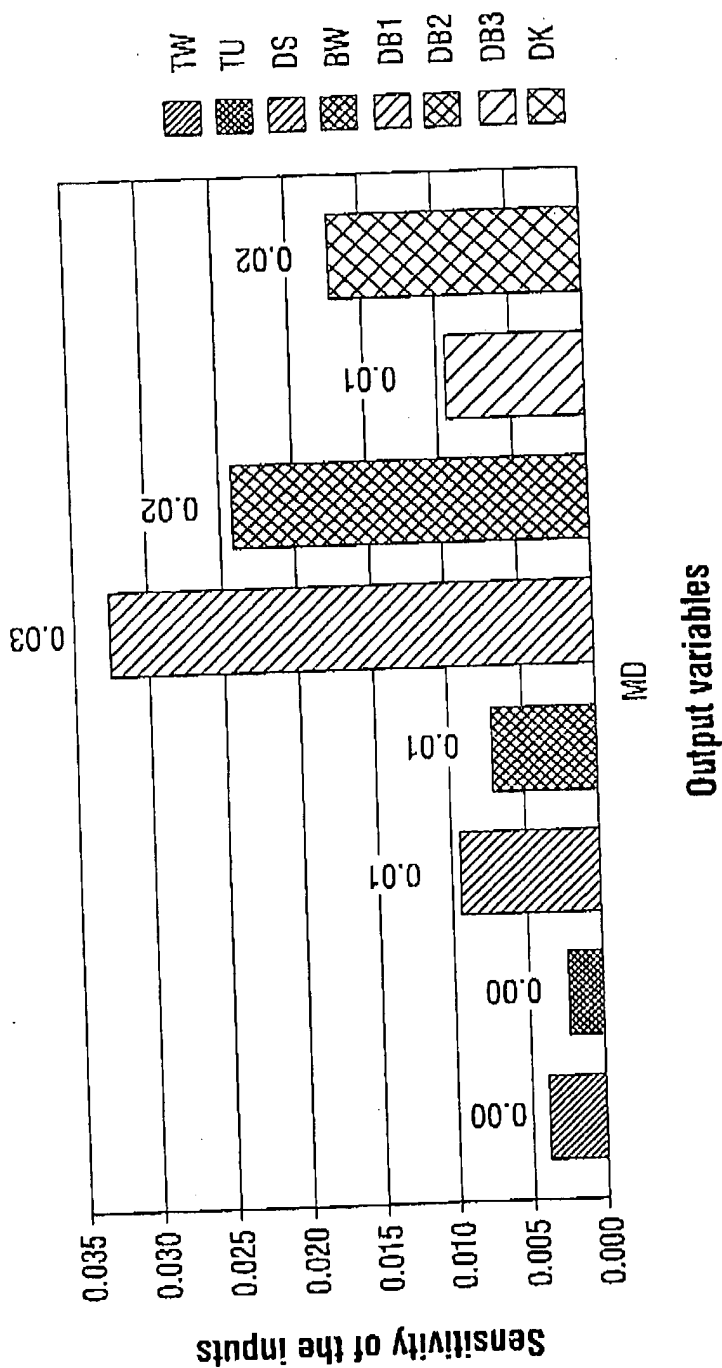
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**Fig. 7** : Histogram of generated torques in a range of 0.87 to 0.92 Nm

REPLACEMENT

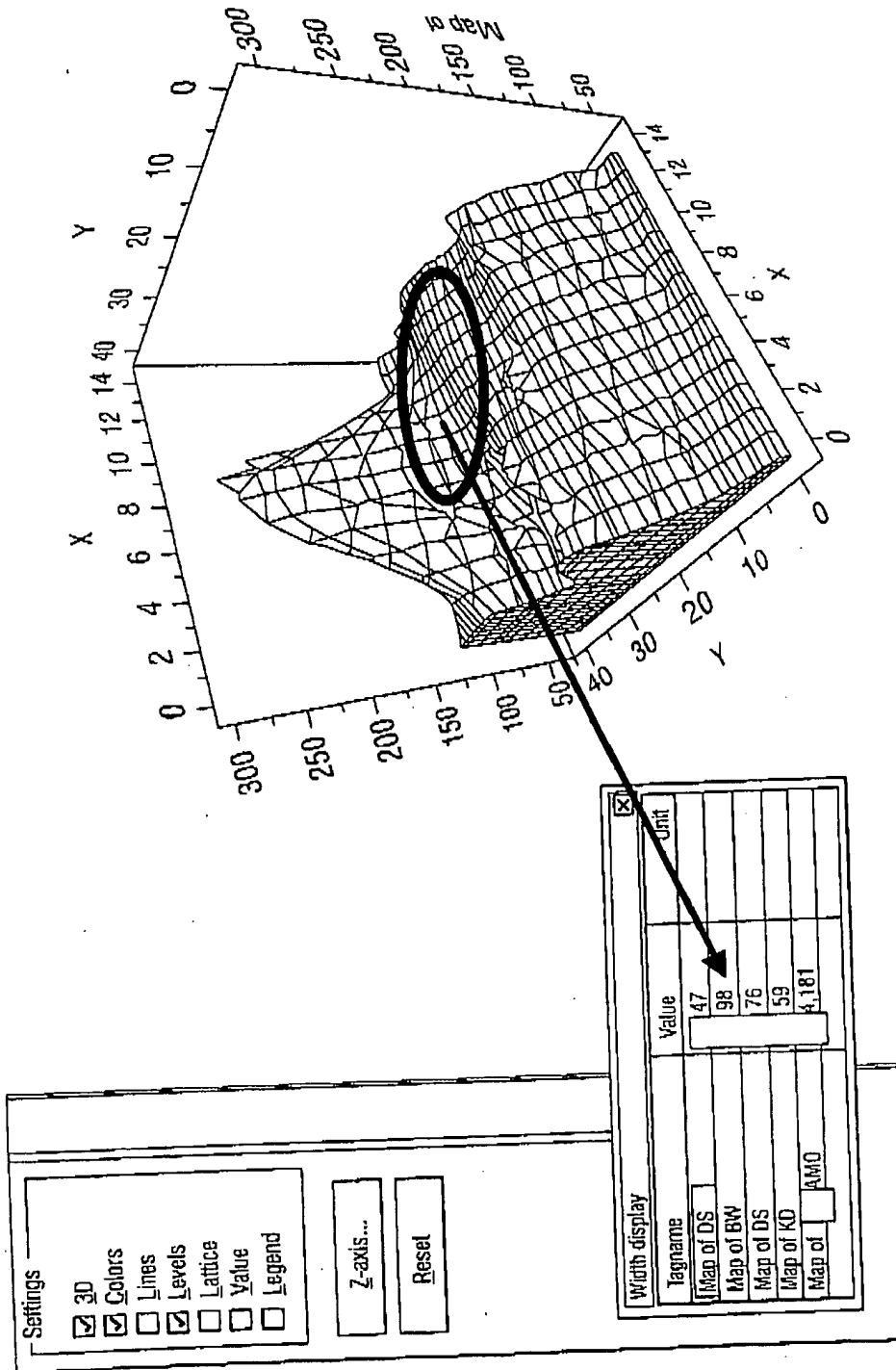
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**Fig. 8** : Sensitivity analysis of a hinge product  
(sensitivity of inputs to output variables MD)



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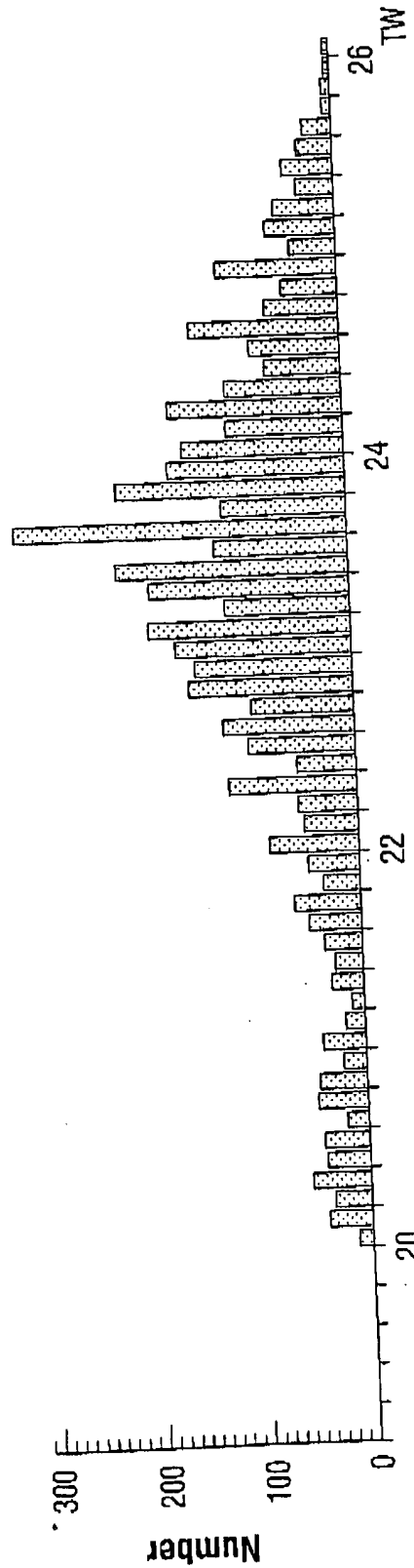
**Fig. 9** : Process optimization via self - organizing maps by automatically back calculating the target variable MD to the input values to be set

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ID	TRA	linie	DK	DORNSPS	TW	TU	DS	BW	DB1	DB2	DB3	MDmin	MDmax	MD
1234	AAB	R	0.019	90	23.81	25.23	0.01382	0.000485	0.013957	0.013926	0.013954	1.319	1.457	1.392
1123	AAG	R	0.019	90	24.33	24.47	0.01401	0.000471	0.013962	0.013956	0.013955	1.38	1.435	1.392
4321	KKA	R	0.019	80	22.39	23.55	0.01289	0.000484	0.013961	0.013958	0.013942	1.357	1.438	1.392
2468	RTC	R	0.017	70	25.11	24.7	0.01405	0.000468	0.013969	0.013966	0.013943	0.046	1.445	1.392
12	UKK	R	0.019	90	23.35	23.95	0.01313	0.000473	0.013967	0.013966	0.013947	1.37	1.419	1.392
1357	AAT	R	0.02	90	24.36	24.21	0.01199	0.000471	0.013987	0.013967	0.013955	1.369	1.427	1.392

**Fig. 10** : Depiction of possible input variables for hinges with target torque MD = 1.392 Nm

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**Fig. 11** : Histogram of temperature TW for a production line for manufacturing hinges